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ORIGINAL RESEARCH ARTICLE

The role of networked learning in academics' writing

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This article explores academics' writing practices, focusing on the ways in which they use digital platforms in their processes of collaborative learning. It draws on interview data from a research project that has involved working closely with academics across different disciplines and institutions to explore their writing practices, understanding academic literacies as situated social practices. The article outlines the characteristics of academics' ongoing professional learning, demonstrating the importance of collaborations on specific projects in generating learning in relation to using digital platforms and for sharing and collaborating on scholarly writing. A very wide range of digital platforms have been identified by these academics, enabling new kinds of collaboration across time and space on writing and research; but challenges around online learning are also identified, particularly the dangers of engaging in learning in public, the pressures of 'always-on'-ness and the different values systems around publishing in different forums.

Keywords: academic writing; academic literacies; collaborative work; digital scholarship; informal learning

Introduction

This article draws on academics' accounts of their writing practices to show the importance of informal networked learning in academics' professional lives, and to highlight some of the characteristics of this learning. Following Banks *et al.* (2003, p. 1), we define networked learning as:

Learning in which information and communications technology (ICT) is used to promote connections: between one learner and other learners, between learners and tutors, and between a learning community and its learning resources.

Our focus in this article is on the collaborative and co-operative connections which develop between academics in their scholarly, teaching and administrative communities. In particular, we focus on how digitally mediated resources support the development of academics' understandings and capabilities around the writing demands they face and the writing practices in which they engage. We argue that a very wide range

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of digital platforms are used to support collaborative writing projects through which academics learn in an ongoing way throughout their professional lives. However, there is for our participants little engagement with (and some suspicion of) unstructured social networking; most of their networked learning is related to specific projects and purposes.

The Economic and Social Research Council-funded project we are reporting on,¹ explores the range of writing practices that academics engage in, working closely with individual academics in different disciplines and institutions. We have asked academics to look back over their professional lives using technobiographical interviewing (Barton and Lee 2013), and used 'day in the life' and 'go-along' interviews (Evans and Jones 2011; Garcia *et al.* 2012) to understand their day-to-day writing practices. This focus on their accounts of their histories and practices has helped us to develop an understanding of what people learn from one another, and how digitally networked collaborations have a crucial part to play in enabling these learning processes.

A social practice, sociomaterial approach

The project is framed within a social practice perspective on literacy, which sees reading and writing as practices developed and maintained through participation in a social context, shaped by aspects of people's purposes, histories and institutional positionings (Barton 2007; Barton and Hamilton 2000). Within this perspective, digital literacies have been defined as 'the constantly changing practices through which people make traceable meanings using digital technologies' (Gillen and Barton 2010, p. 9). Gourlay, Hamilton and Lea (2013) highlight the implications of a practice perspective for understanding digital literacies as situated practices. Seen this way, digital practices cannot be reduced to universal skills, but need to be understood in their diversity as involving texts and material semiosis wherever they occur, through close observation rather than general claims. They change over time, and newer practices are 'layered' over older ones (Selfe and Hawisher 2004). They are socially and institutionally situated, and form part of the way that power relations and social structure are ordered. Most relevant to the current article, they are learnt in many ways, particularly through processes of informal learning in networks of support and through engaging with sponsors of learning (Brandt 2009), rather than primarily through formal training or education.

Informal learning has been studied not only from a literacy studies perspective but also in the field of learning technology (e.g. Castells 2010; Orlikowski 2000), where studies have focused on how relationships between human and non-human actors such as software are configured in learning institutions. Similarly, Actor Network Theory has shed light on how social forces, including material resources, are implicated in relations of power in social contexts (Latour 2005). These approaches have a common view of knowledge and learning as effects of situated activity within networks of relationships (Fenwick and Edwards 2014), and their framing of professional learning as integral to practice (Kilminster *et al.* 2012).

This article focuses particularly on this kind of informal learning, which is not mandated by an educational institution; does not follow a planned curriculum; and

¹<http://wp.lancs.ac.uk/acadswriting/>

is not accredited using formal assessment nor delivered through interactions or relationships which could be characterised as ‘formal’ (Tusting 2003). We demonstrate the importance of informal learning with colleagues, collaborators and students in academics’ trajectories of learning writing practices. In particular, we explore how digital networks support these processes of engagement in academics’ communities of knowledge and practice, paying attention to the material tools and resources that are brought into play. This attention to how the social and the material are entangled in the dynamics of practice – adopting a sociomaterial perspective (Fenwick, Nerland, and Jensen 2012) – highlights the important role of a wide range of digital devices and platforms in academics’ networked learning.

Diversity, change and learning in academics’ writing

The role of an academic in higher education is diverse, and almost every aspect of this role involves specialised forms of writing and knowledge creation in a wide range of genres for many different kinds of audiences (Hyland 2011). Many of these writing practices are acquired with little or no formal training. While most academics have completed an advanced research degree, perhaps with a training component focusing on producing scholarly publications, this does not necessarily provide beginner academics with an adequate understanding of how to go about *consistently* producing the kinds of publications necessary for career progression, in a working environment where other kinds of pressures are constantly at play (Nygaard 2017). Moreover, it seldom provides training in producing all the other kinds of writing that academics are expected to do, such as research evaluation framework data, teaching quality audits, research bids to different kinds of funders and social media profiles.

As the demands of academic life have changed in recent years, writing practices have also changed. Recent transformations in the social and institutional structuring of higher education have changed the nature of the writing demands faced by academics. The introduction of a more managerialist approach (Deem, Hillyard, and Reed 2007) has required academics to learn how to handle new kinds of genres and engage in different rhetorics. Lea and Stierer (2011), in their study of the range of writing UK academics engage with, provide the example of a senior academic who was required to produce a one-page briefing article for the vice-chancellor of the university. This was to be used to ‘showcase academic stars’, in an attempt to procure further funding. The academic and his colleagues had to figure out a way to reconcile the requirements they had been given – to highlight the achievements of individuals and thereby ‘sell’ the centre – with their own perception of their research enterprise as an intrinsically collective one. With increasing demands being placed on people to produce documents that give an account of their own practices (Strathern 2000a, 2000b), such complex negotiations between conflicting priorities and perspectives on academic work lead to everyday tensions that academics must resolve in their writing.

At the same time, information and communications technologies have proliferated, leading to the expansion of a range of different platforms for writing that people can engage with and requirements for people to learn the new writing genres associated with them. While articles for scholarly journals and research monographs are still the most highly valued genres in terms of promotion and research evaluation, academics may now also be involved with social media platforms such as blogs (Davies and Merchant 2007; Mewburn and Thomson 2013), Twitter (Fransman 2013;

Ross *et al.* 2011), podcasting or YouTube (Lupton 2014). Most are now expected to maintain a professional web page hosted by their employing institutions, including uploading publications to institutional research repositories. Many are also curating an online professional presence on sites such as Academia.edu, ResearchGate and LinkedIn (Lupton 2014).

Scholars such as Weller (2011) and Veletsianos and Kimmons (2012) have described how this proliferation of networked platforms has transformed the nature of scholarship. Goodfellow and Lea (2013, p. 1) identify the range of new technological practices that extend ‘right across the spectrum of professional activity, from the digitizing of management information, to the use of virtual learning environments (VLEs) in teaching and learning, to the development of digital scholarship in academic research’. They acknowledge that the impact of this varies enormously between different settings; however, they say that support for this is limited and often focuses on the technological and skills aspects of using different kinds of platforms, rather than exploring the changes in social relations and practices associated with this new communicative order. Moreover, as Boon and Sinclair (2012) acknowledge, transitioning to working in online environments raises challenges to our established uses of language, understandings of the nature of academic identity, relationships with time and ways of engaging in online practices, which extend well beyond technological skills.

Learning how to engage with these new kinds of genres and practices goes on throughout academics’ careers. While programmes are starting to be set up to support certain kinds of writing, particularly writing for scholarly publication (e.g. Morss and Murray 2001), and people are experimenting with other kinds of support such as semi-formalised academic writing groups (Wardale *et al.* 2015), much of the learning which academics engage in happens in an informal way, as they collaborate with other people on particular projects, learning as they go along. Studies such as Nygaard’s investigation into the productivity of Norwegian academics (2017) have found that academic writing is a site of negotiation (Street 2003; Trede, Macklin, and Bridges 2012) in which collaborative learning plays an important role. Similarly, Cloutier (2016) interviewed academics at a Canadian university and found that writing was a deeply social activity, with informal conversations around writing acting as catalysts for learning.

The research described in this article aimed to explore, among others, the following research questions:

1. How are academics’ writing practices shaped by relationships with others?
And, related to this,
2. How are digital communications technologies shaping their writing practices?

Online, networked learning emerged as a key theme as people spoke about learning and change in different areas of their professional writing lives.

Methods

We conducted a series of three interviews each with a total of 16 academics working at three different universities in the United Kingdom and, in an initial exploratory phase, collected data from an additional 10 people. In order to explore how practices

Table 1. Research participants and sites.

| | STEM | Humanities/social science | Applied |
|--------------|------------------|--------------------------------|---|
| University 1 | 2 professors (M) | 2 professors (1M, 1F) | 1 lecturer (F) |
| University 2 | 2 lecturers (M) | 2 senior lecturers (1M, 1F) | 1 professor (F), 1 senior lecturer (M) |
| University 3 | 2 lecturers (M) | 1 professor (M) | 1 lecturer (M) 1 senior lecturer (M) |

vary by disciplinary context, participants were recruited from one STEM discipline (mathematics/chemistry), one humanities discipline (history/English) and one discipline with a primarily applied focus (business/marketing), yielding a total of nine principal research sites, as shown in Table 1. Participants from the exploratory study were mainly from social science disciplines.

Participants were initially recruited via a form of snowball method (Mewburn and Thomson 2013), whereby we began by asking our professional networks for suggestions for potential participants, who then recommended others via their professional networks. In cases where this did not yield a contact in our target disciplines, we selected academics we considered suitable via their institutional webpages and contacted them directly to invite them to participate. Participants were deemed suitable if they were employed as full faculty members in research-active posts, and worked in one of the three broad disciplinary areas listed in Table 1. PhD students, research associates and those in teaching-only roles were excluded. We aimed to achieve a reasonable spread of participants in terms of gender and professional roles. The sample consisted of six professors, four senior lecturers and six lecturers. Of the 16 participants, 4 were women. Participants were aged between their mid-thirties and their mid-sixties. We anonymised both the universities and individual participants, and in presenting the data have changed some identifying details.

Three semi-structured interviews, lasting between 60 and 90 min, were held with each participant between the summer of 2015 and the end of 2016. The first of these was a 'go-along' interview (Evans and Jones 2011; Garcia *et al.* 2012), in which we invited participants to carry out a virtual and physical tour of their work place with us to help us understand the effects of the material space and resources on their knowledge creation practices. This was accompanied by photographs, screen shots and observations. The second, technobiographical, interview (Barton and Lee 2013) focused on the participants' use of digital technologies at different points and in different domains of their lives, addressing particularly the research question on digital technologies. Finally, the third interview focused on a specific day in the life of the participants to discuss the practices and networks they engage with, addressing, among other things, the question around relationships and collaboration.

The interview recordings were transcribed, anonymised and, where agreed, sent to interviewees for comment as a form of member check (Guba and Lincoln 1989) to establish the credibility of the data before they were analysed. The interview transcripts, photographs and observations were then entered into ATLAS.ti qualitative data analysis software for coding. The initial coding list was drawn from our research questions

about aspects of writing practices and change. Additional codes were developed as we engaged with the data.

Codes initially acted as a means of tagging the data in order to identify commonalities and patterns. Thus, simple descriptive codes were used to tag, among other things, genres of writing (journal articles, module descriptors, grant applications, etc.), and digital devices (e.g. tablets, smartphones) and platforms (blogs, Facebook, VLEs, etc.) used by the participants. This enabled us to see which forms of writing our participants were engaged in and what digital resources they drew on to get these done. We also coded people who were mentioned in connection with writing, such as co-writers, family members, reviewers and students. New codes, often for more abstract concepts, emerged from the process of analysing the transcripts. For example, evaluative comments about the pleasures or anxieties around different types of writing were coded, as were mentions of learning, which was an important theme for our participants in connection with writing.

The coding thus enabled us to identify aspects of the transcripts to select for closer analysis. We read these parts carefully in the context of accompanying observational notes and photos in order to understand and develop the themes discussed in this article.

Results and discussion

In this section, we discuss four main characteristics of academics' networked learning highlighted by our analysis, namely, the ways academics learn about digital platforms, the collaborative writing these facilitated, the nature of learning via specific projects and finally the risks and challenges academics perceived in connection with writing on digital platforms.

Learning about digital platforms

An important aspect of what our participants reflected on in their interviews was their learning about how to use digital platforms. Much of the writing academics do is now digitally mediated and this has implications for academics' need to learn how to use more and more platforms and packages. For example, most academics produce slides associated with their lectures and are now expected to upload these to a VLE so that students can access them. They may also have to set up these VLE environments for their courses, structuring information in such a way that it makes sense to users, and in compliance with any departmental or institutional norms that exist. Very few participants in the current study described having had any formal learning to manage working with these sorts of digital platforms. Instead, the process they described was very much an informal one of learning with others. Even when their core teaching content was delivered online, academics reported that their means of learning as to how to exploit the pedagogical potential of these platforms was via informal discussions with colleagues. For example, Josh, a lecturer in history told us:

I'm also new to online courses. A lot of our teaching is done through Moodle, it is very much at the moment learning as I'm going on. So I'm quite responsive to what the students are saying, to what sort of nuggets I can glean from other members of staff.

A social sciences academic, Jen, had also run an online course, and was then asked to write a blog post about this experience. Contributing to a blog entails a form of writing quite different in terms of style and audience to the traditional scholarly genres most academics have experience of, and Jen expressed an interest in receiving training on such genres, saying, 'It would be nice to have some kind of training on that, because that's the genre I'm not used that much to'. In her technobiographical interview, Jen's reflection on her previous learning about digital platforms makes very little mention of any kind of formal training on using any form of digital technology. Rather, learning from other people played a central role in how she picked these up:

'A colleague of mine, who was very technological, she showed me there was this thing called PowerPoint, and that at first seemed quite complicated and mysterious but of course it became a standard tool'; 'I tried Keynote, that a colleague introduced me to, which is very nice and very user-friendly'; 'I had to learn how to use Moodle the moment I entered employment'.

For those who supervised doctoral candidates, their students were also a source of learning about digital platforms. For example, two mathematicians in our study, David and Gareth, both described learning more innovative ways of using LaTeX (a plain text mark-up word processing package used extensively in mathematics and science) from PhD students.

Getting to grips with digital platforms through which other forms of writing were mediated also involved learning from people outside the academic community, such as friends and family members. Jen explained, 'my daughter showed me Prezi, because they learned it at school'; 'I follow my colleagues and some associations related to my professional interests on Twitter ... I learnt it from my daughter'. Her daughter had written her first tweet and explained the affordances of the platform, and had also demonstrated how to look cross-platform to understand audiences, including figuring out from someone's Facebook likes which professional associations to target on Twitter.

Facilitating collaboration

A second characteristic of academics' networked learning was that digital platforms frequently facilitated a greater degree of collaboration, particularly on research-related writing. Our analysis identified as many as 47 digital writing platforms being used in academic work, from word processing to electronic grading systems to social networking platforms, with different resources being drawn on at different stages of collaborative projects. Ian, a mathematician, explained that in preparing a jointly written research article with colleagues from around the world, they might begin with Skype 'to discuss generally issues around the research and ideas that have developed', and then send versions of the article, produced using the package LaTeX, back and forth. This raised difficulties in keeping track of which version was the most recent, so they began to use a program called Subversion which required them to send a message to a server to work with the most up-to-date version, managing version control around different time zones. He also described using Google Docs and Dropbox to facilitate collaborative writing. This supports Haythornthwaite's (2005) observation that when linked by strong ties, such as those developed by on-going research relationships and joint writing projects, a range of different kinds

of media may be used at different times and for different purposes within the same social network.

Not only did digital technology enable greater collaboration, but it also facilitated this across wider geographical areas and at a newly accelerated pace. Platforms for on-line communication enable a new kind of ‘space–time compression’ (Harvey 1989) in academic writing in which working with others can take place instantaneously across almost any spatial distance. International collaborations that, in pre-digital days, would have required extensive logistical planning can now emerge spontaneously. For instance, Diane, who worked in marketing, told us about a complex European bid, involving 13 universities in 6 European countries, in which she entered the bid process only 22 days before the submission deadline (which was met). This contact was initiated by email, and taken forward using Skype for initial discussions and Dropbox for sharing different versions of the documents.

Learning emerges from specific projects

Another important characteristic of the professional learning via online networks identified in our research was that it typically emerged through working on specific projects. For example, Jen had used Facebook for a European project which required making contact with participants around the world, and had engaged with Twitter only when this was part of running a MOOC (massive open online course). Nevertheless, this initial impetus did lead to more general engagement not linked to the specific project:

I started following a few people because I have realised that you can actually find quite useful things, like when somebody publishes a paper and then you find out about it or workshops or even teaching-related things.

For other participants, their engagement with online networks remained tied to specific purposes. Don, a historian, told us,

I first set up a Facebook account in about 2012 with the explicit purpose of using it to publicise a book that I’d written for a trade readership and I think I started using Twitter at about the same time simply to try and publicise the book and to increase its sales.

Twitter was particularly useful for him to publicise a more popular history book he had written, especially when this was mentioned by a political pundit and re-tweeted extensively. However, he had had to learn how to use Twitter from his wife and from a PhD student for this specific purpose; in general, he felt he did not have time to engage with social networks extensively. Another historian, Rebecca, told us, ‘I absolutely refuse to involve myself in any social networking’. However, she does blog, keeps a research website and edits a digital magazine for her department. A clear line seems to be drawn, for both her and Don, between using digital platforms for specific professional purposes, which is acceptable, and more diffuse engagements with social media, which is less so.

Networked professional learning was also influenced by disciplinary and departmental practices. Ian was aware that social media was used as a way of publicising research but felt that this is less relevant in his own field of pure mathematics:

Hardly anybody can understand what our research is about. You're not going to get that much benefit from actually talking about your research, whereas somebody who studies, I don't know, Alzheimer's disease or something, it's obviously got quite a big... You're likely to have a lot of people interested in what they're doing.

In his department, the departmental Twitter account was seen as having much more of an administrative role: 'It's mainly messages for students about, I don't know, arrangements for exams and stuff'. He was aware that some departments strongly encourage people to have a social media profile, but saw his own discipline as something of an outlier in this regard, saying,

I would have thought we'd be one of the last departments to have that, not because of any, sort of, innate rebelliousness of mathematicians, but just because we're very used to working on our own. It's a very small community of researchers.

However, he was aware of greater pressure across the university, often experienced via a sense that, 'you're not really doing your job properly unless you use Twitter to publicise it'.

Challenges and risks of digital platforms

Although digital technologies facilitate new forms of networked learning and collaboration, they also raise challenges that academics must learn to deal with. In particular, our participants experienced pressures in terms of work-life balance, and the potentially exposing nature of learning via public forums.

The rapid development of Diane's involvement in the research bid described above meant that it could scarcely be factored into her workload, meaning that she had to bear the pressure of the additional unanticipated work to tight deadlines on top of her existing work. The global research collaboration facilitated by digital technology may also push work beyond the boundaries of the normal working day. Ian described working on an international project and struggling to find an appropriate time for discussions: 'I've got people in four different countries so actually Skyping all together well you can do a conference call, but then one in China, one in the US. I'm not sure you can find the right time of day to do that'. Related to this compressed or speeded-up pattern of work is a perceived expectation to be constantly available or 'always on', exacerbated by smartphones in particular. Talking about his iPhone, marketing academic Charles told us, I find myself 'constantly on the bloody thing ... The last thing I do at night is check my emails. The first thing I do in the morning is check my emails'. The ubiquity of these tools means that networked learning and practices are always available to people – and always expected. Academics can face a real struggle to establish clear boundaries between work time and free time.

Like Ylijoki and Mäntylä (2003), we found that perceived time pressure featured heavily in our interviews with academics. Many took a somewhat conflicted stance towards time, at once enjoying the speed at which collaboration could move forward, and complaining that acceleration led to feelings of loss of control over working hours. This may be the result of attempting to manage the different timescales imposed by different aspects of their role. For example, time for immediately urgent

tasks, which were often related to administration or service duties, had to be ‘carved out’ of time set aside for tasks that were also important but on a longer timescale, such as scholarly writing. It may be that, as Ylijoki & Mäntylä suggest, the nature of such writing is messier and more time-consuming than allowed for by the temporal rhythms of university management.

Participants also identified risks associated with learning online in the visible way afforded by many digital platforms. Ian described a social network called MathOverflow which enables discussion of mathematical questions, but ‘the trouble with that is that mathematicians are inherently, sort of, cagey. It’s so easy to look stupid if you say something that you ought to have known’. The advantages of collaborating with others need to be weighed against the competition which is equally part of the academic professional community. Charles shared similar concerns. Speaking about Twitter he shared a quote he attributed to Abraham Lincoln: ‘It’s better to remain silent and for everybody to assume that you’re a fool than to open your mouth and confirm the fact’. Similarly, Emma, who was in her first lecturing post in marketing, experienced both time pressures and a feeling of not being knowledgeable enough to commit her ideas to the Internet:

When the day dawns that I have time to write a blog, when I feel suitably informed to talk about stuff... I feel at the minute that it’s all still a bit new. I haven’t done anything for long enough to really call myself an expert in it. So it would just be my opinions that were in a blog. So why would I write them?

These comments illustrate that academics’ relationship with digital platforms and networks can be one that touches upon issues of identity in a rather complex way. They also highlight the necessarily competitive nature of much online ‘collaboration’.

Conclusions

The findings of the project indicate that there are indeed, as Weller (2011) claims, changes in the nature of scholarship, supported and facilitated by networking using a range of digital platforms and devices, and that academics engage in continual processes of professional learning to navigate these changes. This process of learning is informal and multi-directional, with academics learning from students, friends and family members as well as more senior colleagues. The processes described by our participants show that neither unstructured learning through engagement in social networks like Twitter nor formal training, which was rarely mentioned in the interviews, played an important role in this professional learning. Instead, learning emerged for the most part through collaboration with others on specific projects, facilitated by digital networking.

These findings complicate the picture somewhat regarding the notion of communities of practice and apprenticeship models of learning in academia (Berkenkotter, Huckin, and Ackerman 1995; Lave and Wenger 1991). For example, Gourlay (2011) found that new lecturers’ learning experiences were characterised by a sense of confusion and isolation, and concluded that the existence of a ‘community’ via which academics can learn new practices should not be taken for granted. The findings from this project, however, suggest that digital networking facilitates communities of academic practice in which learning of many kinds takes place – about how to make fruitful

use of digital resources, about strategies for sharing and collaborating on writing and about the ways of presenting academic writing itself.

However, this work has also identified tensions around engaging with digital networks, especially given the highly competitive context of much academic work. Digital networks were viewed by many of our participants in instrumental terms, and they often engaged with them only in cases where a direct benefit was perceived, such as when they facilitated learning linked to specific projects, or fulfilled a perceived institutional expectation that scholarly work be widely disseminated and publicised. At times, though, such networks were seen as time-consuming and potentially risky to their reputation.

This study has, unsurprisingly, found many affordances of digital technology in that it enables research collaborations to happen quickly and relatively easily even across international borders. However, the downsides to such flexibility also meant that many academics struggled to keep work within reasonable boundaries. This has important implications for universities in terms of ensuring that their academic staff does not become so caught up in this accelerated productivity that their personal life or health suffers. This research has shown that academics need to be supported to achieve a sensible work-life balance in the face of constant connectivity and the acceleration of academic life.

Although digital technology enables writing to be shared with others across very dispersed locations, the academics in this study were constantly engaged in what Jarrahi, Nelson, and Thomson (2017) call 'configuration work' to understand and manage information that is distributed across multiple platforms and devices. This engenders learning, but it can also lead to frustrations around the accessibility and compatibility of different information-sharing systems. Given that academics can now collaborate with scholars from all over the world, it seems likely that they will continue to encounter a range of different and potentially clashing norms and practices with regard to preferred platforms and configurations for sharing information. It will be important, therefore, for academics to enjoy a high degree of flexibility and autonomy when it comes to deciding which digital technologies to use in particular instances.

This research makes an important contribution to understanding the role of digital networks in academics' professional learning and has implications for the ways in which universities enable such learning to happen. Although no significant role for formal training is suggested, universities nevertheless need to acknowledge the range and diversity of writing that academics do these days, and ensure that academics have both the freedom and the time to exploit digital technologies in flexible ways. This study also found that the place of digitally networked learning in academic life remains, for now, a contested one, with some academics embracing the very visible nature of online networked learning more enthusiastically than others. Exploration of the relationship between attitudes towards online forms of writing and factors such as academics' perceived status and career stage would be a fruitful avenue for further research.

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